OLD DISPLACEMENTS OF THE UPPER END OF THE FEMUR AND THEIR TREATMENT.[1]

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CASE I.—E. K., aged eight years, was seen by me in consultation, May 15, 1883. The following is the history of the case:

For the last nineteen weeks the patient has been confined to his bed with a severe attack of articular rheumatism involving many joints, including both hip-joints. For weeks he has been on his back, the thighs flexed on the pelvis, and legs on the thighs. On getting him on his side, a few days ago, it was noticed that his left thigh was strongly flexed and adducted, and that any attempt to change its position gave him much pain. He now has no acute symptom of his trouble: the heart is much damaged.

On examination it was found that the head of the left femur was dislocated backward and a little upward, the head could be distinctly felt in its new position. There was no swelling about the parts nor any tenderness on pressure.

May 20. After considerable difficulty the head was replaced into the acetabulum. There is still some flexion and adduction. Patient put to bed, and extension, six pounds, applied.

May 26. The head has become displaced again.

June 13. Tenotomy of as many of the adductor muscles as could be safely reached was done, also of the long head of the biceps; the head could then be easily replaced, and the limb could be moved in all normal directions. Patient placed in a wire brace extending from axilla to below feet and embracing both limbs, the left being abducted and extension applied.

July 10. Removed from brace. There has been no further displacement, but the limb is somwhat flexed and adducted. Extension in bed kept up.

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[1] Read before the New York Surgical Society, March 28, 1894.

August 12. A hip-splint applied with an abduction screw, right foot raised with a high sole, and patient allowed to go about on crutches.

In November, on account of the persistent contraction of the adductors, another tenotomy was done.

The final result, after two years of treatment, was a useful limb for walking, but with considerable flexion and marked adduction, which seemed impossible to overcome. There is marked atrophy of the muscles about the trochanter major and the whole limb is wasted. Walking is labored and awkward. There is no pain about the limb. There is some motion at the joint.

August, 1892. Patient has been seen lately, but not examined. He walks with some limp. His condition has greatly improved, but there is still much flexion and adduction.

CASE II.—I. P., aged nine years, was sent to me by Dr. Gibney, and admitted into St. Mary's Hospital for Children, May 13, 1885, with the following history: When two weeks old a swelling was detected on the right thigh just below the hip-joint; this gradually increased in size until it attained considerable proportion; her mother states that it was as large as a child's head. There was much pain about the limb. When the patient was two months old the abscess was opened and continued to discharge for five or six weeks; later another abscess formed and opened above the joint. Patient began to walk at thirteen months, and has continued to do so until three weeks ago, when she fell on her knee; she immediately had pain about the hip, and that side of the pelvis has ever since been changed in shape, and she has been unable to walk without assistance.

On examination the trochanter major was found two and a quarter inches above Nélaton's line; the foot is pointed directly forward and can be turned inward and outward by the patient. The thigh is strongly flexed on the pelvis and cannot be extended.

Diagnosis.—An old epiphysitis and dislocation of the upper end of the femur.

May 24. Extension. No change having taken place.

July 24. Etherized. An incision was made down on to the head. This was found to be altered in shape, but entirely covered with cartilage; no separation of the epiphysis; but the surface of the head was flattened as though a piece had been lost from the extremity. There was no trace of the ligamentum teres.

The cartilage was removed from the head of the bone, also from the acetabulum; the latter did not seem as deep as normal. A nail was passed through the neck and head, and then into the acetabulum so as to hold the parts in apposition. Wounds united, and patient placed in a Barwell's frame.

August 12. Some days after the operation the head slipped out of the acetabulum. Wound reopened. Epiphysis was found detached and loose. Nail broken off. Remains of head replaced, and held by extension in a Barwell's frame.

September 30. All wounds closed; splint removed. Head in position. Patient removed from the hospital by her friends.

March 6, 1891. Patient came to the hospital to-day and was examined. She has a good, useful limb; it is well developed and strong; no lordosis on standing; but it is short two and a quarter inches, due to the displacement of the head.

I think that the operation in this case was an error, on the supposition that the epiphysis had become detached or destroyed, and that dislocation had taken place from that cause, the operation was done; but the supposed conditions were found not to exist. Yet the ultimate result, although there is marked shortening, gives her a much better and more useful limb than if the operation had not been performed, the probability being strong that the head could not have been held in the acetabulum.

Case III.—W. L., eight years of age, was admitted into St. Mary's Hospital, April 24, 1886, with partial paralysis and marked flexion of both thighs on the pelvis, the result of a cerebral meningitis.

June 26, 1887. Was transferred to surgical division. He had been on his back with both thighs flexed since his admission. His mental condition, which was much impaired at the date of entrance into the hospital, has greatly improved. It was found that the head of the right femur is displaced backward, but how long it has existed in this condition is not known.

February 8. It was found that the head of the bone was caught over the edge of the sacro-iliac foramen, and that any amount of justifiable manipulation failed to change its position.

February 18. An incision was made over the head and upper part of the shaft of the femur in order to gain access to these parts. The head was found enclosed in the capsule. The latter being greatly elongated and thinned, all the muscles attached to the trochanter major had to be divided before the head could be replaced in the acetabulum, so fixed had they become in their altered position. No change had taken place in the acetabulum. The ligamentum teres had been ruptured. The wound was closed, except a small space for drainage, and extension with a long splint applied.

June 28. The wound has long since closed. It did well except that a few stitches gave way. The patient has been kept in bed in order to allow the parts to become well consolidated. He is now permitted to get up, and is sent down to Rockaway for the summer.

October 29. There is considerable motion at the hip-joint; shortening three fourths of an inch, patient going about. Patient discharged.

April, 1892. Patient came to the hospital to-day for examination. He has had no trouble since his discharge. There is an apparent shortening of two and three-fourths inches, due to displacement of the head of the femur. There has been no change in the actual length of the two limbs. There is but slight lordosis on standing. There is marked atrophy of the muscles behind the trochanter major. Flexion, abduction, and adduction are good; rotation limited. He can bear his weight on the limb. He is plump and well-developed.

Case IV.—B. S., aged eight years, was admitted into St. Mary's Hospital, March 29, 1892, with the following imperfect history: Before she was one year old it was noticed that the right thigh was flexed and that she was lame. No further history can be obtained. On examination there is found to be a displacement of the upper end of the right femur backward and a little upward, the limb strongly flexed and adducted. Walking is difficult and awkward.

April 8. Etherized. On examination no ankylosis is found to exist and therefore no benefit could follow an osteotomy. An incision was made over the trochanter major extending down to the shaft so as to give access to the head. After separating the soft parts it was found that the head had disappeared and that the neck was represented by an irregular stump. The acetabulum was not looked for, as it would have been impossible to replace the remains of the neck without an extensive dissection, and, if replaced, could not have been held in position. The remains of the neck were removed with an osteotome, and the limb brought into a fair position. The wound was closed, except at its most dependent portion, which was left open for drainage. Extension and a long splint.

May 24. Has had no pain or temperature; wound firmly closed.

Position of the limb good; no flexion. Patient up with a long hip-splint.

October 20, 1892. Re-examined. Shortening two inches. There is not much active motion in the limb at its upper extremity. No pain. No deformity in the direction of flexion, abduction or adduction.

All of these four cases do not belong to the same class, but for the purpose of this paper are grouped together, having three points in common,—namely, (1) the displacement, (2) the consequent deformity, (3) the question of treatment.

Case I was treated outside of the hospital, and is only introduced here as showing the result in a case of spontaneous dislocation treated by manipulation.

Cases I and III are examples of spontaneous dislocation, occurring during long recumbency on the back with the thigh strongly flexed on the pelvis and adducted.

Case II was probably a traumatic dislocation in an impaired joint.

In Case IV the displacement of the upper end of the femur was pathological, and due to acute arthritis in childhood. Whatever the cause of the deformity may have been, the indication in all these cases was to give the patient a limb that would be useful for walking.

In Cases I, II, and III, as far as the head of the bone and the acetabulum were concerned, there was no disease and no contraindication to the replacement of the head; the obstacle was in the altered relations of the muscles.

In Case IV the joint had been destroyed. There was no dislocation, because the joint had ceased to exist. Such cases should be classed as displacements, and are pathological in contradistinction to spontaneous and traumatic dislocations. In the former class it is possible to speak of reduction; in the latter impossible, because the joint has ceased to exist.

In Case I the head was returned to the acetabulum after manipulation and was held there for a few days, when it became displaced and was reduced again after a free tenotomy, and has remained in contact with the acetabulum ever since. The ultimate result after nine years is fair, his walk is labored and with much more limp than in Cases II and III. The duration of active treatment extended over three years.

In Case II an error was made in diagnosis; it was supposed that there had been a separation of the epiphysis, due to an old epiphysitis, yet the operation demonstrated that there had been no separation. I do not think that the head could have been held in its normal position by simple reduction. The attempt to obtain ankylosis failed, and although the patient was discharged with the head in the acetabulum, it became displaced in time, but with this gain, that there was no abnormal flexion or adduction. The limb is well developed and strong, and the patient walks easily without limp, only the limb is short.

Case III was a case of spontaneous dislocation. Here again the head was returned to the acetabulum. After a cutting operation the head remained in good position for four months, and the patient used the limb. In this case also after five years the displacement was found to have returned, and as far as the position of the head was concerned the operation was a failure, but the limb is strong and useful, with slight flexion. It is short more than two inches.

In Case IV no attempt was made to replace the upper end of the femur, first, because there was no head to replace, and secondly, if there had been, previous experience led me to think that any such attempt would prove a failure. The remains of the neck were cut off so as to let the shaft slide up, and thus relax the shortened muscles, and allow the limb to be placed in a straight position.

The object, I think, of an operation in old displacements of the upper end of the femur, whether due to a true dislocation or pathological displacement, is not to restore the head of the bone to its normal position, but to correct the secondary deformity, flexion and adduction, and give the patient a useful limb, although a shortened one.

After a displacement has lasted for some time the muscles attached to the upper end of the femur become fixed in their abnormal position, some become lengthened, others shortened, and these changes are of such a nature that the position of the head cannot be changed without a very free section; the head can then be replaced. But there is nothing to hold it in the acetabulum, and soon after weight is thrown on the limb the head will escape, and the operation, as far as the reduction is concerned, will be a failure. At least this is the history in two of my cases. The ultimate result in these four cases is as follows: Case I, although the head is in its normal position, flexion and adduction still exists to a troublesome degree, and the result is fair. I do not think that the limb is so good or useful a one as in Cases II and III, notwithstanding the shortening.

In the remaining three cases the limbs, although short, are very useful, and there is but little or very slight flexion and no adduction.

In Case III the patient can raise himself onto a chair with the shortened limb.

Four methods of affording relief in this class of cases have been tried.

(1) Manipulation.
(2) Subcutaneous osteotomy.
(3) Arthrotomy.
(4) Excision.

In some cases a reduction is possible, as in Case I. Where that can be accomplished the result may be good, depending, of course, on the length of time the deformity has existed; but even after a reduction considerable flexion and adduction will remain, and these are very difficult deformities to overcome.

I have never tried an osteotomy, for the reason that I would not expect any permanent benefit. The indications for an osteotomy would be to correct the flexion and adduction. In order to do this section of the limb in this position would have to be made below the trochanter minor; an operation above this point would leave the muscle inserted into the trochanter minor still acting on the shaft, and a correction could not be attained.

In case of dislocation the head is not firmly ankylosed. After an osteotomy below the trochanter minor the lower fragment would be united to the upper at an angle, and as soon as any weight was put on the limb further flexion would be inevitable. In case of non-union the danger from a necrosis of the upper fragment is great. As far as my experience goes with deformities of the hip without firm ankylosis an osteotomy has always been followed by a relapse of the flexion and adduction, as soon as the limb was used.

(3) In two cases an incision was made down upon the head and upper portion of the shaft, and after a very full division of the muscles inserted into the trochanter major the head was replaced. If these two cases had been reported when the patient left the hospital they would have been reported as successes. But in time the head of the bone in both of these cases became displaced, but with this gain, that the limbs are useful ones, with no deformity other than the shortening, normal motion being but slightly restricted.

(4) Excision of the head of the femur has been resorted to more frequently than any other method for correction of the flexion and adduction, and it has been followed in all cases reported by satisfactory results. In Case IV it was resorted to, and with good result.

From the above I think that displacements of the upper end of the femur, with deformity,—flexion and adduction,—if the dislocation cannot be readily reduced in cases of this latter class, a removal of the head so as to allow the shaft to slip up, and thus relieve the shortened and contracted muscles, is followed by the most satisfactory results.

The question as to how much manipulation is justifiable, and how long persisted in, in order to replace the head into the acetabulum, must be left to the judgment of each operator. It must be remembered that after reduction marked flexion and adduction will remain ; these malpositions are very difficult to correct. The attempt to return and hold the head in its normal position by free section of muscles has in my hands proved a failure.

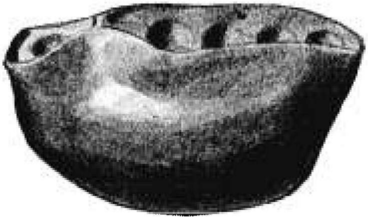

FIG. 1.—Interdental rubber splint.

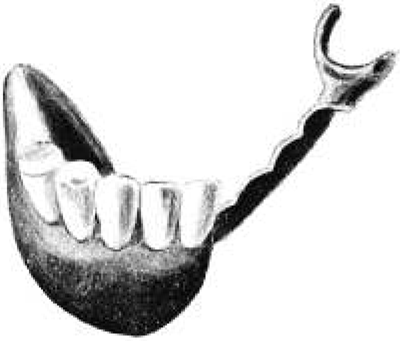

FIG. 4.—Artificial teeth and "plumper."

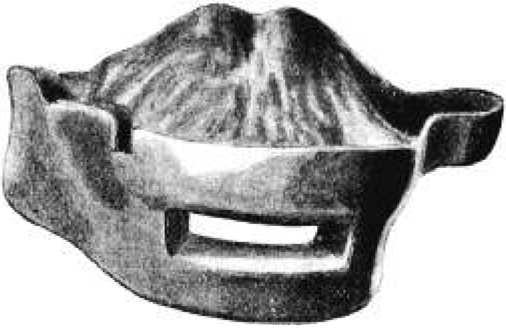

FIG. 6.—Interdental rubber splint used in case 3.